Identify the Critical Process

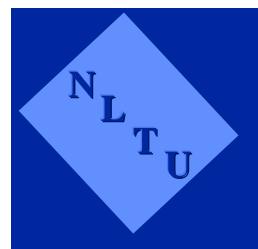Lesson 1   Identify & Prioritize Critical Processes

Lesson 2   Define & Refine the Critical Process
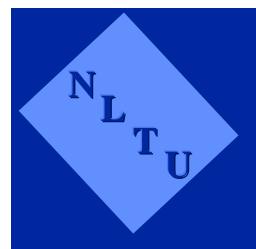
Identify & Prioritize Critical Processes

Learning Objectives:

◆ Define the term "critical process"

◆ Explain the importance of identifying & prioritizing critical processes

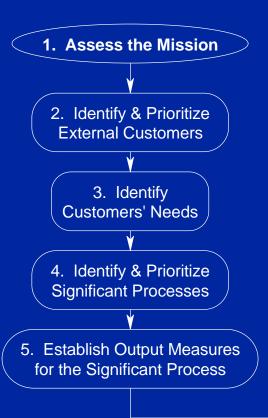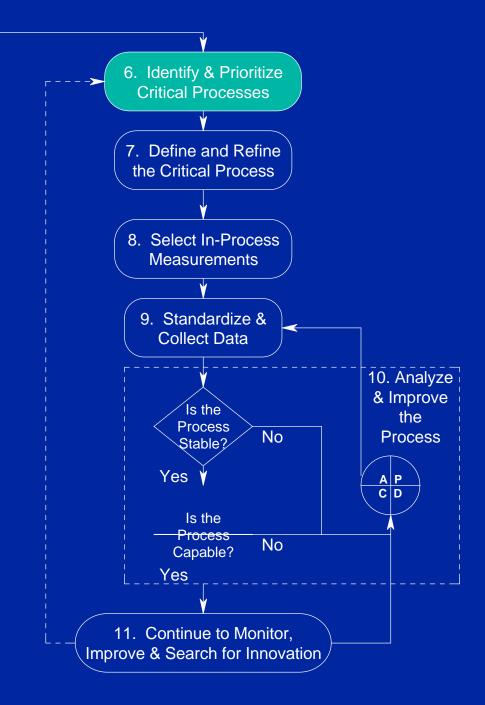◆ Describe the purpose and construction of an Interrelationship Digraph (ID)

Identify & Prioritize Critical Processes

Learning Objectives:

◆ Describe the purpose and construction of a Combination Interrelationship Digraph/Matrix

◆ Construct a Combination Interrelationship Digraph Matrix to prioritize an organization's critical processes

Process Management Flowchart

1. Assess the Mission

↓

2. Identify & Prioritize External Customers

↓

3. Identify Customers' Needs

↓

4. Identify & Prioritize Significant Processes

↓

5. Establish Output Measures for the Significant Process

6. Identify & Prioritize Critical Processes

↓

7. Define and Refine the Critical Process

↓

8. Select In-Process Measurements

↓

9. Standardize & Collect Data

Is the Process Stable?

No

Yes

Is the Process Capable?

No

Yes

10. Analyze & Improve the Process

| A | P |
| C | D |

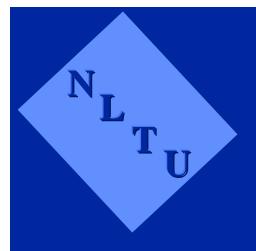11. Continue to Monitor, Improve & Search for Innovation

Working Draft
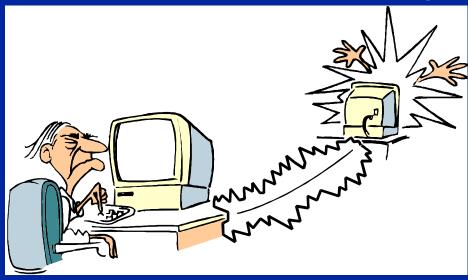OCT 96

How to Identify the Critical Processes

N L T U
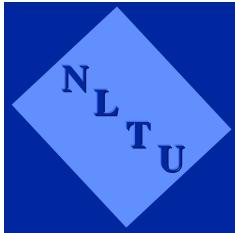
- ◆ **Make a list of all processes required to provide the product or service**
- ◆ **Review the list for completeness**
- ◆ **Record the results**
- ◆ **Choose the critical process**

What is a Combination Interrelationship Digraph Matrix?

A tool to identify the **direction of influence** and **strength of influence** among options
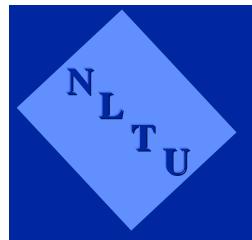
What is an Interrelationship Digraph?
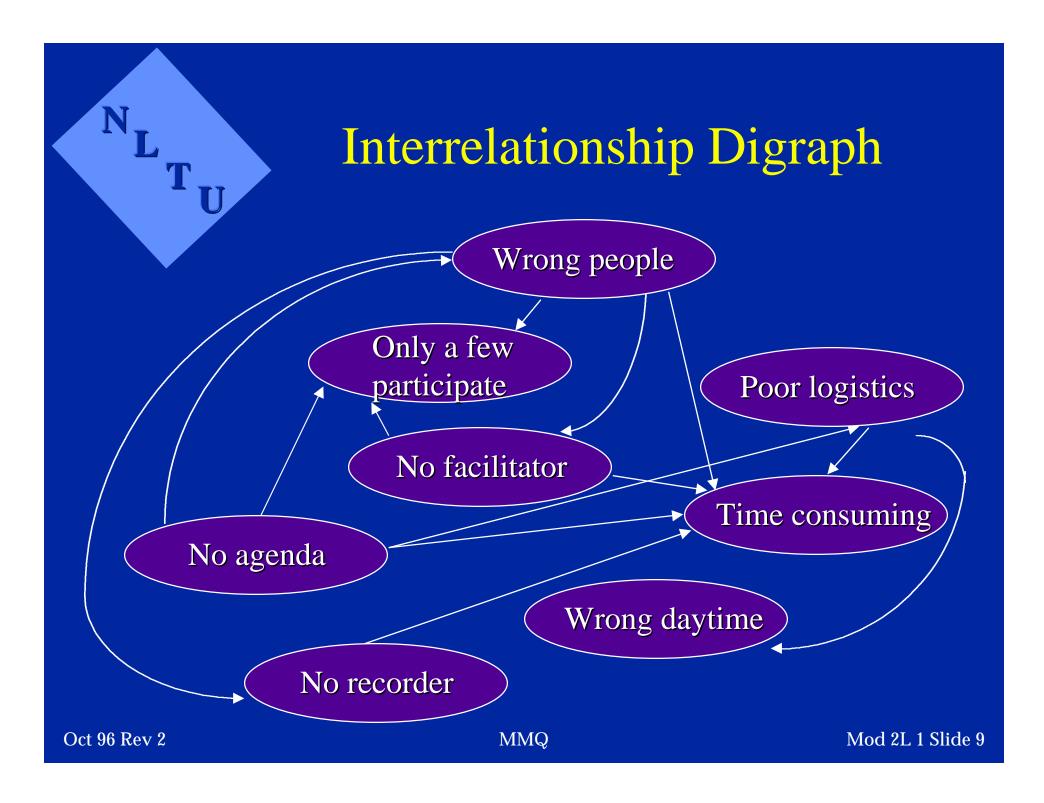
A tool used to determine the **logical relationships** among several items
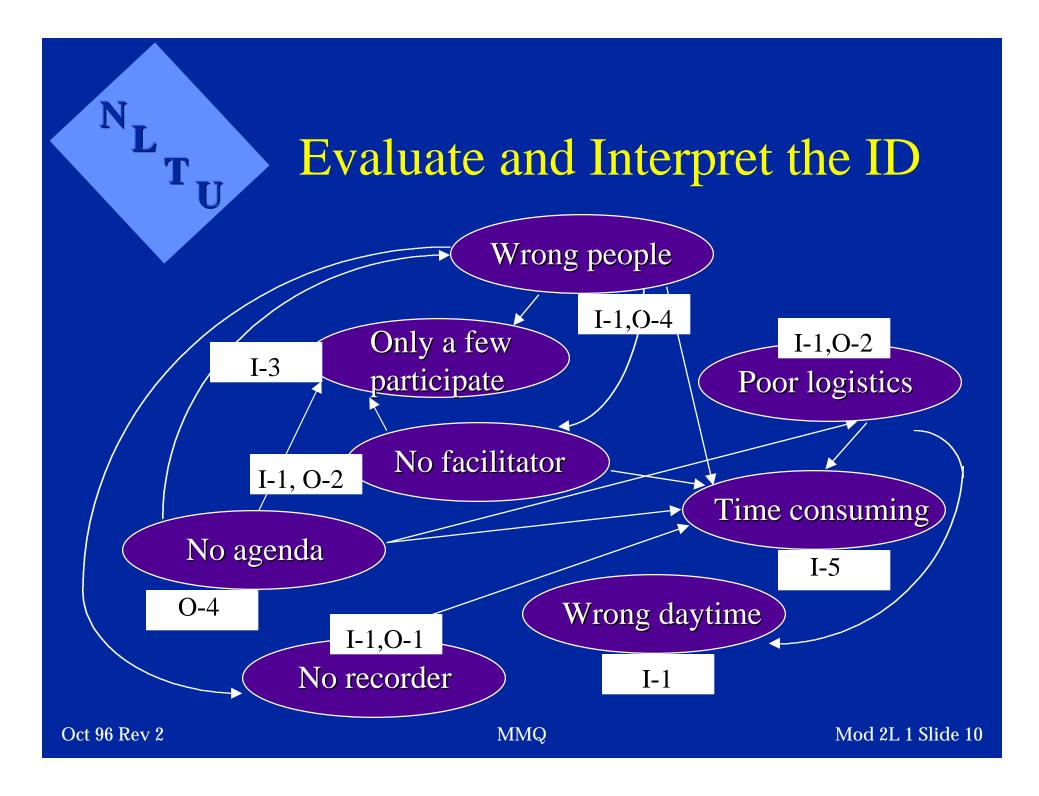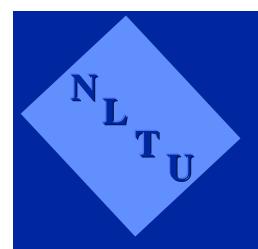
How to Construct an Interrelationship Digraph

◆ Assemble the right team

◆ Agree on the issue/problem statement

◆ Display completed cards

◆ Draw relationship arrows

◆ Review and revise the ID

◆ Evaluate and interpret the ID
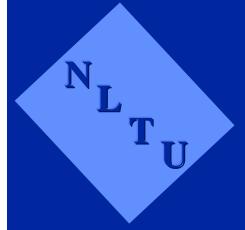
Interrelationship Digraph

How to Construct a Combination Interrelationship Digraph Matrix

N L T U

◆ Assemble the right team

◆ Agree on the issues to be evaluated

◆ List the issues down the left side of the matrix and repeat horizontally on the top

◆ Cross out cells that compare items to themselves

How to Construct a Combination Interrelationship Digraph Matrix

◆ Determine relationship strengths

◆ Draw a symbol for each relationship

⊙ For a strong relationship
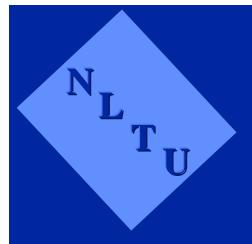
◯ For some relationship

△ For a weak relationship
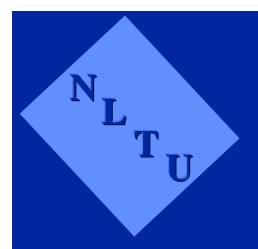
— For no relationship

How to Construct a Combination Interrelationship Digraph Matrix
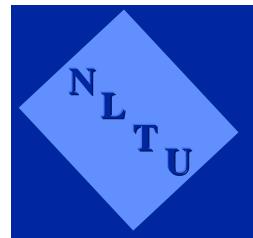
◆ Draw relationship arrows for all items which have a relationship

　◆ Ask the question, "Does the item on the left cause or influence the item above?"

　◆ If the answer is "yes", draw an out arrow

　◆ If the answer is "no", draw an in arrow

◆ Total the data and draw your conclusions

Step by Step Construction of a Combination ID Matrix

◆ Construct an L-shaped Matrix with the same set of items on both axes

◆ Cross out cells where items are compared to themselves

◆ Compare each item to every other item to determine whether there is a relationship, and if so, the strength of that relationship.

Step by Step Construction of a Combination ID Matrix

◆ For each pair of items which have a relationship, determine the direction of cause or influence

◆ Tabulate the relationship arrows and relationship strengths across each row

◆ Interpret the chart and choose the highest priority item(s)

Combination ID Matrix in Process Management

	Ensure Connectivity	Deconflict BG units and contacts	Detach ASW attack units	Receive contact reports	Advise BG Commander	Position ASW units	Coordinate with other Warfare Cmdrs
Ensure Connectivity							
Deconflict BG units and contacts							
Detach ASW attack units							
Receive contact reports							
Advise BG Commander							
Position ASW units							
Coordinate with other Warfare Cdr							

Construct an L-shaped matrix comparing all processes to each other

Combination ID Matrix in Process Management

	Ensure Connectivity	Deconflict BG units and contacts	Detach ASW attack units	Receive contact reports	Advise BG Commander	Position ASW units	Coordinate with other Warfare Cmdrs
Ensure Connectivity	✕						
Deconflict BG units and contacts		✕					
Detach ASW attack units			✕				
Receive contact reports				✕			
Advise BG Commander					✕		
Position ASW units						✕	
Coordinate with other Warfare Cdr							✕

Cross out cells that compare items to themselves

Combination ID Matrix in Process Management

	Ensure Connectivity	Deconflict BG units and contacts	Detach ASW attack units	Receive contact reports	Advise BG Commander	Position ASW units	Coordinate with other Warfare Cmdrs
Ensure Connectivity	✕	◉	△	◉	—	◉	○
Deconflict BG units and contacts		✕					
Detach ASW attack units			✕				
Receive contact reports				✕			
Advise BG Commander					✕		
Position ASW units						✕	
Coordinate with other Warfare Cdr							✕

Compare each item to all others for relationship and strength

Combination ID Matrix in Process Management

	Ensure Connectivity	Deconflict BG units and contacts	Detach ASW attack units	Receive contact reports	Advise BG Commander	Position ASW units	Coordinate with other Warfare Cmdrs
Ensure Connectivity	✕	◉	△	◉	—	◉	◯
Deconflict BG units and contacts	◉	✕					
Detach ASW attack units	△		✕				
Receive contact reports	◉			✕			
Advise BG Commander	—				✕		
Position ASW units	◉					✕	
Coordinate with other Warfare Cdr	◯						✕

Fill in the left side of the matrix (mirror image)

Combination ID Matrix in Process Management

	Ensure Connectivity	Deconflict BG units and contacts	Detach ASW attack units	Receive contact reports	Advise BG Commander	Position ASW units	Coordinate with other Warfare Cmdrs
Ensure Connectivity	✕	⊙ ↑	△ ↑	⊙ ↑	—	⊙ ←	◯ ↑
Deconflict BG units and contacts	⊙	✕					
Detach ASW attack units	△		✕				
Receive contact reports	⊙			✕			
Advise BG Commander	—				✕		
Position ASW units	⊙					✕	
Coordinate with other Warfare Cdr	◯						✕
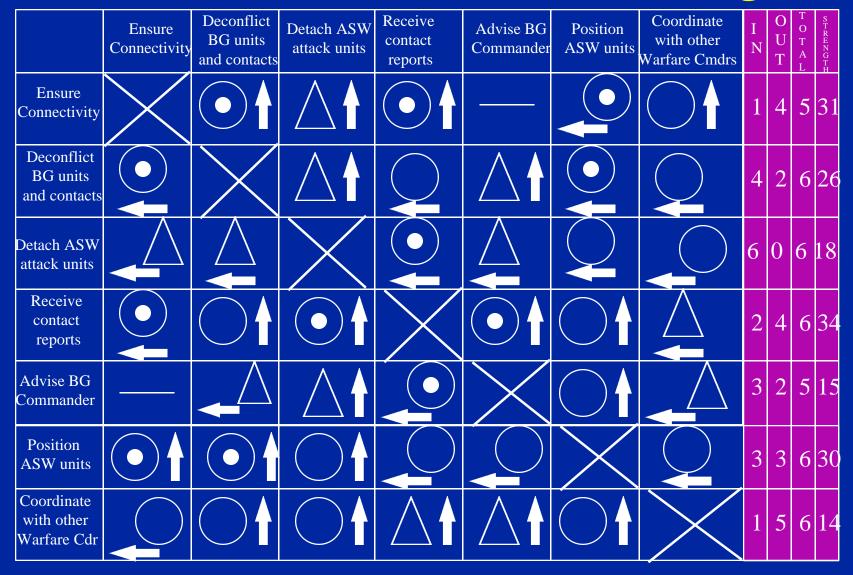
For each relationship, determine the direction of cause or influence

Combination ID Matrix in Process Management

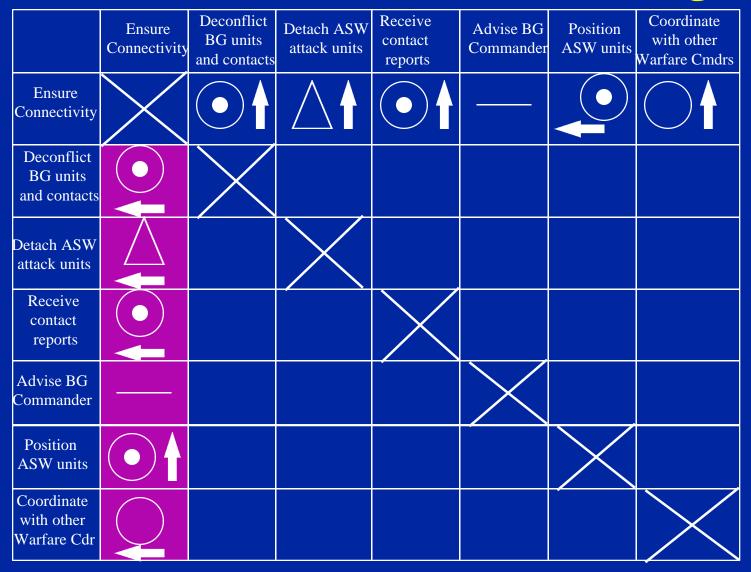|	Ensure Connectivity	Deconflict BG units and contacts	Detach ASW attack units	Receive contact reports	Advise BG Commander	Position ASW units	Coordinate with other Warfare Cmdrs
Ensure Connectivity	✕	⊙ ↑	△ ↑	⊙ ↑	—	⊙ ←	○ ↑
Deconflict BG units and contacts	⊙ ←	✕					
Detach ASW attack units	△ ←		✕				
Receive contact reports	⊙ ←			✕			
Advise BG Commander	—				✕		
Position ASW units	⊙ ↑					✕	
Coordinate with other Warfare Cdr	○ ←						✕

Complete the left side of the matrix (mirror image)

Combination ID Matrix in Process Management

Complete the remainder of the matrix, by rows

Combination ID Matrix in Process Management

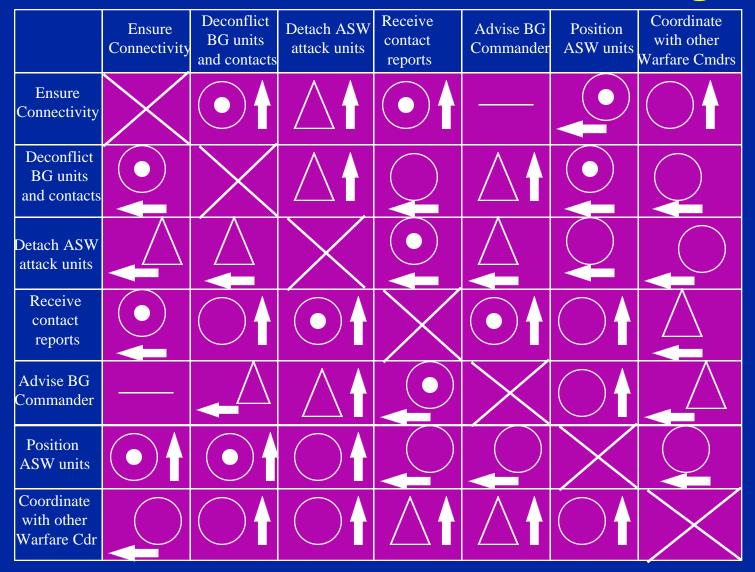|	Ensure Connectivity	Deconflict BG units and contacts	Detach ASW attack units	Receive contact reports	Advise BG Commander	Position ASW units	Coordinate with other Warfare Cmdrs	IN	OUT	TOTAL	STRENGTH
Ensure Connectivity		⊙ ↑	△ ↑	⊙ ↑	—	⊙ ←	○ ↑	1	4	5	31
Deconflict BG units and contacts	⊙ ←		△ ↑	○ ←	△ ↑	⊙ ←	○ ←	4	2	6	26
Detach ASW attack units	△ ←	△ ←		⊙ ←	△ ←	○ ←	○ ←	6	0	6	18
Receive contact reports	⊙ ←	○ ↑	⊙ ↑		⊙ ←	○ ↑	△ ←	2	4	6	34
Advise BG Commander	—	△ ←	△ ↑	⊙ ←		○ ↑	△ ←	3	2	5	15
Position ASW units	⊙ ↑	⊙ ↑	○ ↑	○ ←	○ ←		○ ←	3	3	6	30
Coordinate with other Warfare Cdr	○ ←	○ ↑	○ ↑	△ ↑	△ ↑	○ ↑		1	5	6	14

Tabulate the relationship arrows and strengths across each row

Combination ID Matrix in Process Management

Interpret the Combo ID and choose the most critical process(es)

Product of Lesson 1

A prioritized list of critical processes

Define & Refine the Critical Process

Learning Objectives:

◆ Explain the importance of defining a process

◆ Describe how to use a deployment flow chart to define a process

◆ Explain the importance of eliminating complexity in a process

◆ Describe how to use an opportunity flowchart to refine a process
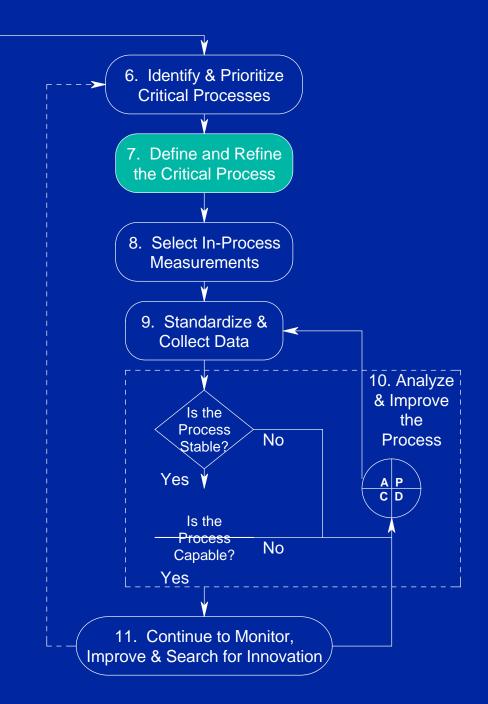
Process Management Flowchart
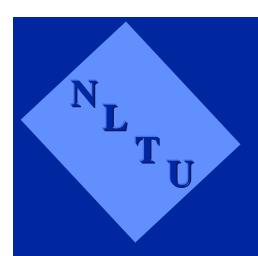
1. Assess the Mission

↓

2. Identify & Prioritize External Customers

↓

3. Identify Customers' Needs

↓

4. Identify & Prioritize Significant Processes

↓

5. Establish Output Measures for the Significant Process

6. Identify & Prioritize Critical Processes

↓

7. Define and Refine the Critical Process

↓

8. Select In-Process Measurements

↓

9. Standardize & Collect Data

Is the Process Stable? No

Yes ↓

Is the Process Capable? No

Yes

10. Analyze & Improve the Process

A | P
C | D

11. Continue to Monitor, Improve & Search for Innovation

Working Draft
OCT 96
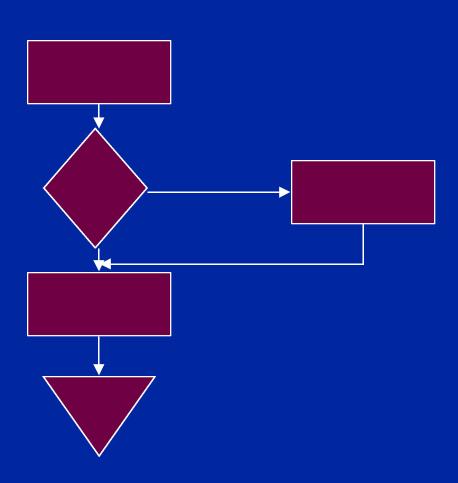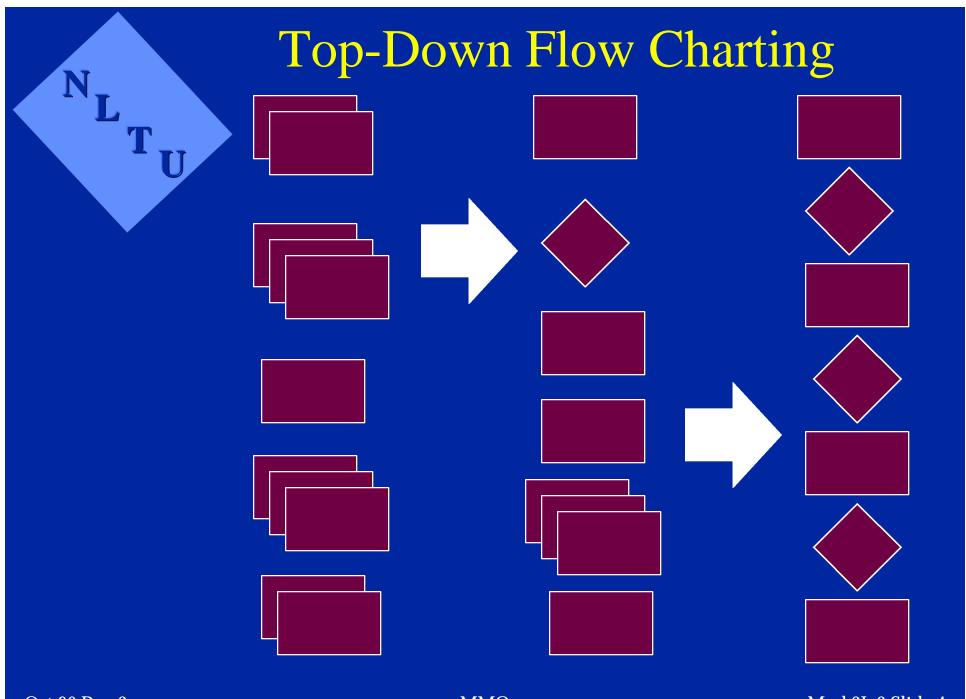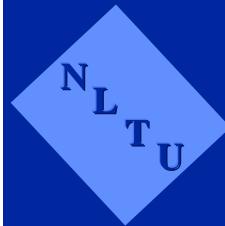
Define the Critical Process

◆ Construct a detailed as-is flow chart to illustrate the process

Top-Down Flow Charting
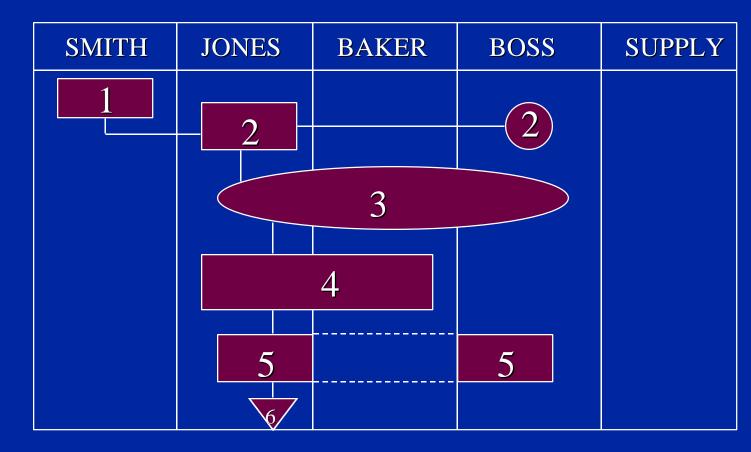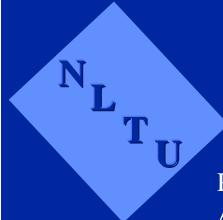
Development of a Process Flowchart

◆ Develop a macro-level flowchart of the steps of the process

◆ Develop a mini-level flowchart for each subprocess of the macro-level flowchart

◆ Develop a micro-level flowchart for each subprocess of the mini-level flowchart

Macro-Level Flowchart

Process: Receive & Stock   Prepared by:_____

Activity: _____Date: _____

Vendor	Stock Person	Supervisor	R.O.D. Dept.	Quality Concerns
Ship material	Receive shipment		◯	
	Uncrate & inspect			
	Log receipt in computer			
	Determine stocking location			
	Place material & paperwork in stocking location			

Mini-Level Flowchart

Process: Receive & Stock   Prepared by:_____

Activity: Uncrate & Inspect   Date: _____

Vendor	Stock Person	Supervisor	R.O.D. Dept.	Quality Concerns
	Uncrate material → Visually inspect material for damage/discrepancies → OK? — No → ... Yes → Certs required? — No → ... Yes → Certs present? — No → ... Yes → Store certs with material		Resolve the problem Resolve the problem	

Micro-Level Flowchart

Process: Receive & Stock   Prepared by:_____
Activity: Uncrate Material   Date: _____

Stock Person	Tool Room Attendant	Supervisor	R.O.D. Dept.	Quality Concerns
Obtain uncrating tool kit from tool room	Issue tool kit			
Review uncrating instructions				
Are additional tools or materials needed? — Yes →	Obtain additional tools and materials from tool room	Issue additional tools/materials		
No				
Uncrate shipment IAW uncrating instructions				
Place packing and crating material in dumpster				

NLTU

Defined Case Study Receive and Stock Material Process

N L T U

Receive and Stock
Macro-Level
Flowchart

- Receive shipment
- Uncrate & inspect
- Log receipt in computer
- Determine stocking location
- Place material & paperwork in stocking location

Uncrate and Inspect
Mini-Level
Flowchart

- Uncrate material
- Visually inspect material for damage or discrepancies
- OK?
- Certs required?
- Certs present?
- Store certs with material

Uncrate Material
Micro-Level
Flowchart

- Obtain uncrating tool kit from tool room
- Review uncrating instructions
- Are additional tools or materials needed?
- Uncrate shipment IAW uncrating instructions
- Place packing and crating material in dumpster

Refine the Critical Process

◆ Distinguish between process refinement and process improvement

◆ Review and revise the flowchart to eliminate complexity
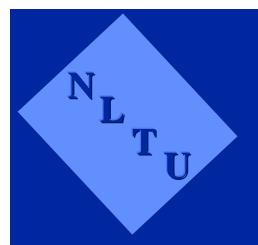
Opportunity Flowchart

- ◆ Identifies steps that are essential to produce the required outputs (value added)

- ◆ Identifies activities that add to costs, not quality (cost added only)
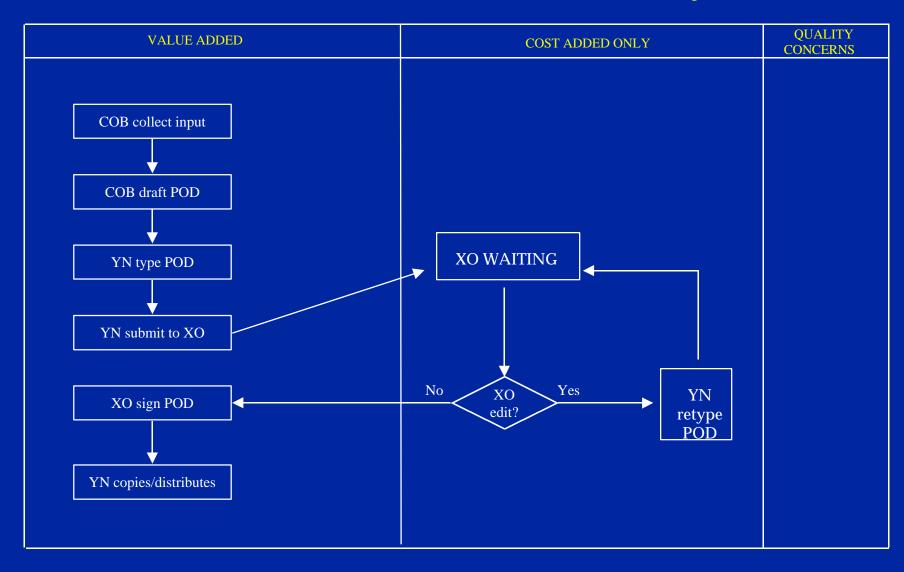
Constructing an Opportunity Flowchart

◆ Divide the page into two columns (VA and CAO)

◆ List vertically the steps in the process

◆ Determine if each activity is value-added or cost-added only

◆ The ideal process is depicted under the VA column
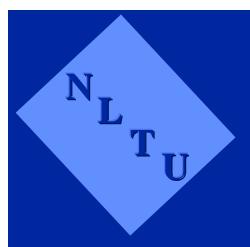
Opportunity Flowchart for Develop and Distribute the Plan of the Day

VALUE ADDED	COST ADDED ONLY	QUALITY CONCERNS

COB collect input

↓

COB draft POD

↓

YN type POD

↓

YN submit to XO

XO WAITING

↓

No ← XO edit? → Yes

XO sign POD

↓

YN copies/distributes

YN retype POD
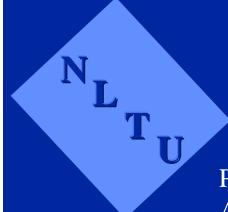
Step by Step Refinement of a Process Flowchart

◆ Select a step of the Macro-Level Flowchart to be refined (Mini-Level Process)

◆ Select a step of the Mini-Level Flowchart to be refined (Micro-Level Process)

◆ Use an opportunity flowchart to refine the Micro-Level Process

◆ Repeat for each step of the Mini-Level Flowchart
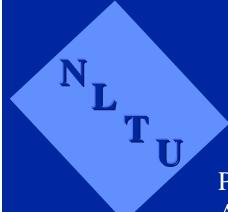
Step by Step Refinement of a Process Flowchart

◆ Use an opportunity flowchart to refine the Mini-Level Process

◆ Repeat for each step of the Macro-Level Flowchart

◆ Use an opportunity flowchart to refine the Macro-Level Process

Macro-Level Flowchart

Process: Receive & Stock   Prepared by:_____

Activity: _____Date: _____

Vendor	Stock Person	Supervisor	R.O.D. Dept.	Quality Concerns
Ship material	Receive shipment		◯	
	Uncrate & inspect			
	Log receipt in computer			
	Determine stocking location			
	Place material & paperwork in stocking location			

N L T U

Mini-Level Flowchart

Process: Receive & Stock   Prepared by:_____

Activity: Uncrate & Inspect   Date: _____

Vendor	Stock Person	Supervisor	R.O.D. Dept.	Quality Concerns
	Uncrate material			
	Visually inspect material for damage/discrepancies			
	OK? — No		Resolve the problem	
	Yes			
	Certs required? — No			
	Yes			
	Certs present? — No		Resolve the problem	
	Yes			
	Store certs with material			

Micro-Level Flowchart

OPPORTUNITY

PROCESS: Receive and Stock

PREPARED BY:

ACTIVITY: Uncrate Material

DATE:

VALUE ADDED	COST ADDED ONLY	QUALITY CONCERNS

VALUE ADDED

Obtain uncrating tool kit from tool room

Issue tool kit

Review uncrating instructions

COST ADDED ONLY

Additional tools/matls req'd?

Yes

No

Obtain additional tools/materials from tool room

Issue additional tools/materials

Uncrate shipment IAW uncrating instructions

Place packing and crating materials in dumpster

QUALITY CONCERNS

Add "and materials" to step

Review instructions to identify needed uncrating tools and materials

Micro-Level Flowchart
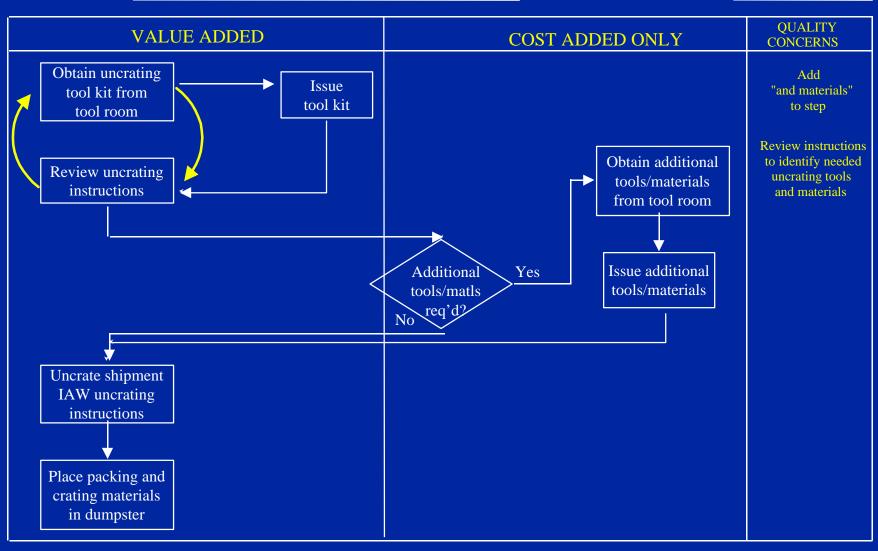
PROCESS: _____ Receive and Stock _____

ACTIVITY: _____ Uncrate Material _____

PREPARED BY: _____

DATE: _____

STOCK PERSON	TOOL ROOM ATTENDANT	SUPERVISOR	R.O.D. DEPT	QUALITY CONCERNS
Review uncrating instructions				Review instructions to identify needed uncrating tools and materials
Obtain uncrating tool kit and materials from tool room	Issue tool kit			
Uncrate shipment IAW uncrating instructions				
Place packing and crating materials in dumpster				

Mini-Level Flowchart

PROCESS: Receive and Stock

ACTIVITY: Uncrate and Inspect

PREPARED BY:

DATE:

VENDOR	STOCK PERSON	SUPERVISOR	R.O.D. DEPT	QUALITY CONCERNS
	Uncrate material			
	Visually inspect material for damage/ discrepancies			
	OK? — No →		Resolve the problem	
	Yes			
	Certs required? — No →			
	Yes			
	Certs present? — No →		Resolve the problem	
	Yes			
	Store certs with material			

Micro-Level Flowchart

OPPORTUNITY

PROCESS: Receive and Stock

ACTIVITY: Visually inspect material for damage/discrepancies

PREPARED BY:

DATE:

VALUE ADDED	COST ADDED ONLY	QUALITY CONCERNS

Determine discrepant inspection req'ment from B.O.L

Examine mat'l for compliance w/B.O.L.

Mat'l meets B.O.L reqs? —No→ ROD

Yes

Determine shelf life reqments

Examine mat'l for shelf life compliance

Shelf life OK ? —No→ ROD

Yes

Mat'l undamaged ? —No→ ROD

Yes

Micro-Level Flowchart

PROCESS: Receive and Stock

ACTIVITY: Visually inspect material for damage/discrepancies

PREPARED BY:

DATE:

VENDOR	STOCK PERSON	SUPERVISOR	R.O.D. DEPT	QUALITY CONCERNS
	Determine discrepant inspection requirement from bill of lading			
	Examine material for compliance with bill of lading description			
	Materials meet B.O.L reqmts? — No → ○	No	○	
	Yes			
	Determine shelf life requirements for material			
	Examine material for compliance with shelf life requirements			
	Mat'l shelf life OK? — No → ○	No	○	
	Yes			
	Mat'l undamaged? — No → ○	No	○	
	Yes ▽			

Mini-Level Flowchart

OPPORTUNITY _____
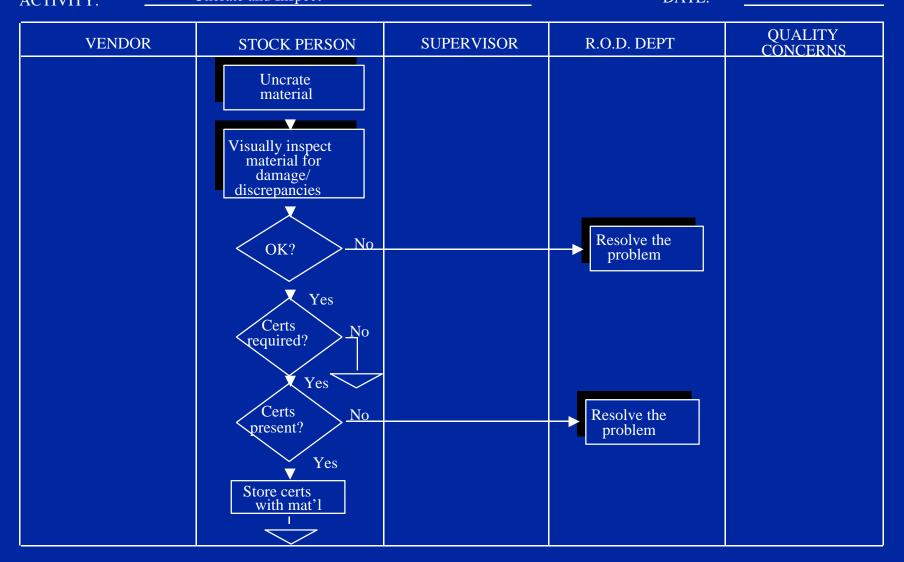
PROCESS: _____ Receive and Stock _____

PREPARED BY: _____

ACTIVITY: _____ Uncrate and Inspect _____

DATE: _____

VALUE ADDED	COST ADDED ONLY	QUALITY CONCERNS

VALUE ADDED

Uncrate material

↓

Visually inspect material for damage/ discrepancies

COST ADDED ONLY

OK? — No → Resolve the problem

Yes

Certs required? — No

Yes

Certs present? — No → Resolve the problem

Yes

Store certs with material

↓

Mini-Level Flowchart
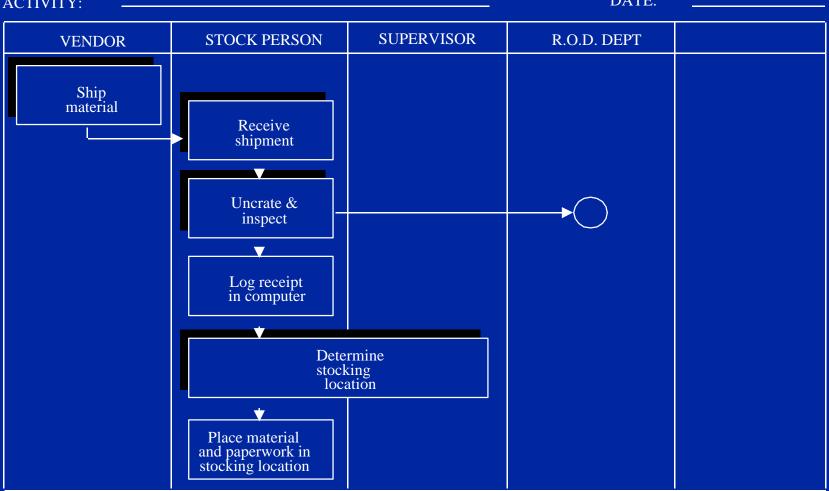
REFINED PROCESS

PROCESS: Receive and Stock

ACTIVITY: Uncrate and Inspect

PREPARED BY:

DATE:

VENDOR	STOCK PERSON	SUPERVISOR	R.O.D. DEPT	QUALITY CONCERNS
	Uncrate material			
	Visually inspect material for damage/ discrepancies			
	OK? — No		Resolve the problem	
	Yes			
	Certs required? — No			
	Yes			
	Certs present? — No		Resolve the problem	
	Yes			
	Store certs with mat'l			

Macro-Level Flowchart

PROCESS: _____Receive and Stock_____

ACTIVITY: _____

PREPARED BY: _____

DATE: _____

VENDOR	STOCK PERSON	SUPERVISOR	R.O.D. DEPT	
Ship material	Receive shipment			
	Uncrate & inspect		◯	
	Log receipt in computer			
	Determine stocking location			
	Place material and paperwork in stocking location			

Macro-Level Flowchart

PROCESS: Receive and Stock

PREPARED BY:

ACTIVITY:

DATE:

VENDOR	STOCK PERSON	SUPERVISOR	R.O.D. DEPT	
Ship material	Receive shipment			
	Uncrate & inspect		◯	
	Log receipt in computer			
	Determine stocking location			
	Place material and paperwork in stocking location			

Refined Case Study Receive and Stock Material Process

Receive and Stock Macro-Level Flowchart

Receive shipment

↓

Uncrate and inspect

↓

Log receipt in computer

↓

Determine stocking location

↓

Place material and paperwork in stocking location

Uncrate & Inspect Mini-Level Flowchart

Uncrate material

↓

Inspect material for damage/ discrepancies

↓

OK?

↓

Certs required?

↓

Certs present & material serial number undamaged and legible?

↓

Store certs with material

Uncrate Material Micro-Level Flowchart

Obtain uncrating tool kit from tool room

↓

Review uncrating instructions

↓

Uncrate shipment IAW uncrating instructions

↓

Place packing and crating materials in dumpster

Product of Lesson 3

Refined (ideal) process flowchart